Ratio-Based Approaches

- North Carolina
  - Mitigation Requirements Based on Impact Stream Quality
    - Poor to Fair 1:1
    - Good 2:1
    - Excellent 3:1
  - Mitigation Requirements Based on Mitigation Type
    - Restoration 1:1
    - Enhancement I 1:1-1.5
    - Enhancement II 1:1.5-2.5
    - Preservation 1:2.5-5.0

Ratio-Based Approaches

- Tennessee
  - Mitigation Requirements Based on Impact
    - Alteration III 1:1
    - Alteration II 0.75:1
    - Alteration I 0.50:1
  - Mitigation Requirements Based on Treatment
    - Replacement 1:1
    - Restoration 1:1.5
    - Enhancement II 1:3
    - Enhancement I 1:4-6
    - Preservation 1:10-60

Ratio-Based Approaches

- Kentucky
  - Mitigation Requirements 1:1
  - Mitigation Credits Based on Activities
    - Daylighting + Full Restoration 1:1
    - Daylighting + Enhancement 0.8:1
    - Full-Scale Restoration 0.8:1
    - Enhancement 0.2-0.6:1
    - Preservation 0.1:1

Index-Based Approaches

- Savannah District
  - Adverse Impact Factors

Stream Type Impacted	Intermittent 0.1			Perennial Stream > 15' in width 0.4			Perennial Stream ≤ 15' in width 0.8		
Priority Area	Tertiary 0.5			Secondary 0.8			Primary 1.5		
Existing Condition	Fully Impaired 0.25			Somewhat Impaired 0.5			Fully Functional 1.0		
Duration	Temporary 0.05			Recurrent 0.1			Permanent 0.2		
Dominant Impact	Shade/ Clear 0.05	Utility X-ing 0.4	Bank Armor 0.7	Deten-tion 1.5	Stream Crossing (≤ 100') 1.7	Impound 2.7	Morpho-logic Change 2.7	Pipe >100' 3.0	Fill 3.0
Scaling Factor (Based on # linear feet impacted)	< 100' impact 0	100-200' impact 0.05	201-500' impact 0.1	501-1000' impact 0.2	> 1000' impact 0.4 for each 1000' feet of impact (round impacts to the nearest 1000') (example: 2,200' of impact – scaling factor = 0.8; 2,800' of impact – scaling factor – 1.2)				

Index-Based Approaches

- Savannah District
  - Stream Restoration Factors

Net Benefit	All proposals must include at least a 25' riparian buffer on both banks Buffers ≥50' +2'/%slope also may generate riparian credit (use ~~see~~ buffer worksheet)				
	Streambank Stabilization	Structure Removal	Stream Channel Restoration and Stream Relocation		
	2.0	4.0 to 8.0	Priority 4 1.0	Priority 3 4.0	Priority 1 or 2 8.0
Monitoring/ Contingency	Minimal (Required) 0	Moderate 0.3	Substantial 0.4	Excellent 1.0	
Priority Area	Tertiary 0.05	Secondary 0.2	Primary 1.0		
Control	RC on restored channel and 25' buffer (Required) 0.1	Required RC + CE or GPP 0.3	Required RC + CE + GPP 0.5		
Mitigation Timing	Schedule 3 0	Schedule 2 (Use for all banks) 0.1	Schedule 1 0.5		

Index-Based Approaches

- Savannah District
  - Riparian Restoration Factors

Net Benefit - select value for each stream side	Riparian Restoration/Habitat Improvement/Preservation Factors – MBW = Minimum Buffer Width = 50'+2'/% slope Select Values from Table 1			
System Credit Condition 1	Condition 1: MWB restored or protected on both streambanks To Calculate Value: Average of the Net Benefit values for Stream Side A and Stream Side B			
System Credit Condition 2	RC Placed on Channel 0.05		RC and CE Placed on Channel 0.1	
M&C - select value for each stream side	Mimimal (Required) 0	Moderate 0.2	Substantial 0.25	Excellent 0.3
Priority Area	Tertiary 0.05	Secondary 0.2	Primary 0.7	
Control	RC on restored channel and 25' buffer (Required) 0.1	Required RC + CE or GPP 0.3	Required RC + CE + GPP 0.5	
Mitigation Timing - select value for each stream side	Schedule 3 0	Schedule 2 (Use for all banks) 0.05	Schedule 1 0.15	

Index-Based Approaches

- Mobile District
  - Adverse Impact

Stream Type Impacted	Intermittent 0.1			1st or 2nd Order Perennial Stream 0.8			>2nd Order Perennial Stream 0.4		
Priority Area	Tertiary 0.1			Secondary 0.4			Primary 0.8		
Existing Condition	Impaired 0.1			Somewhat Impaired 0.8			Fully Functional 1.6		
Duration	Temporary 0.05			Recurrent 0.1			Permanent 0.3		
Dominant Impact	Shade/ Clear 0.05	Utility Crossing 0.15	Below Grade Culvert 0.3	Armor 0.5	Detention /Weir 0.75	Morpho-logic Change 1.5	Impound-ment (dam) 2.0	Pipe >100' 2.2	Fill 2.5
Cumulative Impact Factor	<100' 0	100'-200' 0.05	201-500' 0.1	501-1000' 0.2	>1000 linear feet (LF) 0.1 reach 500 LF of impact (example: scaling factor for 5,280 LF of impacts = 1.1)				

Index-Based Approaches

- Mobile District
  - Stream Restoration Factors

Stream Type	Intermittent 0.05	1st or 2nd Order Perennial Stream 0.4	>2nd order Perennial Stream (Bankfull width) >15' 0.4	15'-30' 0.6	30'-50' 0.8	>50' 1.0
Priority Area	Tertiary 0.05	Secondary 0.2	Primary 0.4			
Existing Condition	Impaired 0.4	Somewhat Impaired 0.05				
Net Benefit	Stream Relocation 0.1	Stream Channel Restoration/Streambank Stabilization Moderate 1.0	Good 2.0	Excellent 3.5		
Monitoring/ Contingency	Level I 0.05	Level II 0.3	Level III 0.5			
Control	Restrictive Covenant 0.1	Conservation Easement 0.4				
Credits	Schedule 1 0.3	Schedule 2 0.1	Schedule 3 0			

Index-Based Approaches

- Mobile District
  - Riparian Restoration Factors

Stream Type	Intermittent 0.05	>2nd Order Perennial Stream 0.2	1st or 2nd Order Perennial 0.4
Priority Area	Tertiary 0.05	Secondary 0.2	Primary 0.4
Net Benefit (for each side of stream	Livestock (select values from Table 1 times 1.2 multiplier)	Riparian Restoration and Preservation Factors (select values from Table 1) (MBW = Minimum Buffer Width = 50' + 2' / 1% slope)	
System Protection Credit	Condition : MBW restored or protected on both streambanks To calculate:(Net Benefit Stream Side A + Net Benefit Stream Side B) / 2		
Monitoring/ Contingency (for each side of stream)	Level I 0.05	Level II 0.15	Level III 0.25
Control	Restrictive Covenant 0.05	Conservation Easement 0.2	
Credits (for each side of stream)	Schedule 1 0.15	Schedule 2 0.05	Schedule 3 0

Index-Based Approaches

- Charleston District
  - Adverse Impact

FACTORS	OPTIONS								
Lost Type	Intermittent 1st and 2nd Order Streams 0.3					All Other Streams 0.8			
Priority Category	Tertiary 0.1			Secondary 0.3			Primary 0.5		
Existing Condition	Impaired……..Moderately Impaired……..Fully Functional 0.1 0.75 1.5								
Duration	Seasonal 0.05			0-1 Year 0.1			> 1 Year 0.3		
Dominant Impact	Shade/ Clear 0.05	Utility Crossing 0.15	Culvert 0.3	Armor 0.5	Dentent-ion/Weir 0.75	Morpho-logic 1.5	Impound 2.0	Pipe 2.2	Fill 2.5
Cumulative Impact	0.0005 x total linear feet of stream impacted ($\sum LL_i$)								

Index-Based Approaches

- Charleston District
  - Riparian Restoration Factors

Factors	Options				
Net Improvement	Riparian Buffer Enhancement (Calculate Value from above Net Improvement Table) 0.05 - 1.0				
Control	Covenant Private 0.05	Covenant POA 0.1	Easement 0.15	Conservancy 0.2	
Credit Schedule	Schedule 5 * 0	Schedule 4 0.02	Schedule 3 0.05	Schedule 2 0.08	Schedule 1 0.1
Kind	Category 5 0.0	Category 4 0.04	Category 3 0.06	Category 2 0.08	Category 1 0.1
Location	Zone 5 0.0	Zone 4 0.05	Zone 3 0.1	Zone 2 0.2	Zone 1 0.3

Index-Based Approaches

- Charleston District
  - Stream Restoration Factors

Factors	Options				
Net Improvement	Moderate 0.7 - 1.5	Good 1.6 - 2.0	Excellent 2.1 - 3.0		
Priority Category	Tertiary 0.05	Secondary 0.2	Primary 0.3		
Control	Covenant Private 0.05	Covenant POA 0.1	Easement 0.15	Conservancy 0.2	
Credit Schedule	Schedule 5 0	Schedule 4 0.02	Schedule 3 0.05	Schedule 2 0.08	Schedule 1 0.1
Kind	Category 5 0	Category 4 0.02	Category 3 0.05	Category 2 0.08	Category 1 0.1
Location	Zone 5 0	Zone 4 0.05	Zone 3 0.10	Zone 2 0.15	Zone 1 0.2

Index-Based Approaches

- Virginia Unified Stream Methodology
  - Condition Index (**CI**)
    - Channel Condition = 1 – 3
    - Riparian Buffer = 0.5 – 1.5
    - In-Stream Habitat = 0.5 – 1.5
    - Channel Alteration = 0.5 – 1.5
  - **RCI** = (Sum of all **CIs**) ÷ 5
  - Stream Impact Factor **(IF)**
    - Severe = 1.0
    - Significant = 0.75
    - Moderate = 0.5
    - Negligible = 0
  - Compensation Requirement (**CR**) = Length of Impact (**LI**) × Reach Condition Index (**RCI**) × Impact Factor (**IF**)

Index-Based Approaches

- Compensation Credit (**CC**) Restoration = 1 credit per foot
  - Enhancement = 0.09 – 0.3 credits per foot per bank
  - Riparian Areas = 0 – 0.4 credits per foot
- Adjustment Factors (**AF**)
  - Rare, Threatened, and Endangered Species or Communities = 0.1 – 0.3
  - Livestock Exclusion = 0.1 – 0.3
  - Watershed Preservation = 0.1 – 0.3
- Total Compensation Credit (**Total CC**) = Sum [Restoration Credit + Enhancement Credit + Riparian Buffer Credit + Adjustment Factor (AF) Credit]
- **Total CC** must be = **Total CR**

Index-Based Approaches

- Ohio – Adverse Impacts

Impact Factors	Options					
Existing Aquatic Life Use **Section 5.2.1**	LRW Class I PHWH Protection of Downstream Uses, skip remaining analysis	MWH Class II PHWH Enter **3.0** for (I) in Box 1 below, calculate mitigation credits needed	WWH **1.5**	EWH **2.5**	CWH Class III PHWH **3.0**	SSH Add **0.2** to score for June-September Aquatic life Use
Existing Habitat Quality **Section 5.2.2**	Analysis for these weighting		Poor **0.2**	Fair **0.6**	Good **1.0**	Excellent **1.5**
Priority Area **Section 5.2.3**			Tertiary **0.1**	Secondary **0.5**	Primary **1.0**	

Index-Based Approaches

- Ohio – Adverse Impacts Continued

Priority Area **Section 5.2.3**	Analysis for these weighting factors is not necessary for default procedures (see Section 2.1.3.2)	Tertiary **0.1**	Secondary **0.5**	Primary **1.0**	
Existing Geo-morphic Integrity **Section 5.2.4**		Poor **0.2**	Fair **0.5**	Good **1.0**	Excellent **1.5**
Existing Flood Plain Quality **Section 5.2.5.1**		Poor **0.2**	Fair **0.8**	Good **1.0**	Excellent **1.5**
Impact Category **Section 5.2.6**		Minimal **0.2**	Moderate **1.0**	High **1.5**	Severe **2.0**

Index-Based Approaches

- Ohio – Mitigation Factors

Mitigation Factors	Options				
Stream Restoration/ Relocation Design (Section 5.2.7)	None (Preservation Only Projects) 0.0	Minimal (use limited-see text) 0.5	Moderate 1.0	Good 2.0	Excellent 3.0
Riparian/ Floodplain Preservation (Section 5.2.5)	Minimal (Relocation Projects Only) 0.0	Low 0.2	Moderate 0.4	Good 0.7	Excellent 1.0
Riparian Restoration and Enhancement (Section 5.2.8)	None 0.0	Minimal 0.2	Moderate 0.4	Good 0.7	Excellent 1.0
Resulting Aquatic Life Use (Section 5.2.1)	MWH or Class II PHWH 0.1		WWH 0.6	EWH 0.8	CWH or Class III PHWH 1.0
Resulting Habitat Quality (Section 5.2.2)	Fair (Relocation Projects Only) 0.1		Good 0.5		Excellent 1.0

Index-Based Approaches

- Ohio – Mitigation Factors Continued

Priority Area (Section 5.2.3)	Tertiary 0.0		Secondary 0.1		Primary 0.5
Watershed Location (Section 5.2.9)	Outside Watershed 0.0	Within HUC 8 Digit Watershed 0.3	Within HUC 11 Digit Watershed 0.5	Within HUC 14 Digit Watershed 0.8	Onsite 1.0
Control (Section 5.2.10)	Deed Restriction 0.0		Conservation Easement 0.3		Fee Simple 0.5
Impact/ Mitigation Relationship (Section 5.2.11)	Out-of-Kind 0.1			In-Kind 0.5	
Implementation Schedule (Section 5.2.12)	Schedule 5 -0.1	Schedule 4 0.0	Schedule 3 0.1	Schedule 2 0.2	Schedule 1 0.3
Supplemental Water Quality Activities (Section 5.2.13)	None 0.0	Moderate 0.1	Good 0.2		Excellent 0.3
Threat to Stream Segment (section 5.2.14)	NA or Low 0.0	Moderate 0.1	High 0.2		Very High 0.3